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ABSTRACT

Rural farm residents from central Ohio were administered a follow-up survey to ascertain the social impact (post shock) of a 1970-1974 lake development project which necessitated the acquisition of 8,800 acres of privately owned land and the physical relocation of approximately 90 families. A random sampled consisted of 89 restructured community residents (19 relocated and 70 nonrelocated). Questionnaires and interviews were used to determine the existence of differences between initial shock and post shock groups with regard to five variables (community identification, community alienation, community satisfaction, value orientation, and familism). Three comparisons were made to determine attitudinal changes which were hypothesized to occur over time for the total group and for relocated and nonrelocated subgroups. A fourth comparison determined if significant differences could be noted between the post shock relocated and post shock nonrelocated. Findings basically revealed that the restructured community group felt stronger commitments to the group and showed more traditionalism, suggesting the post shock group felt change was occurring too rapidly. In conclusion, implementation procedures, equal treatment of all concerned, and time scheduling were major factors in community attitudes toward the watershed project. (AH)

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A Longitudinal Analysis of the Attitudinal Response of Rural People to Natural Resource Development: A Case Study of the Impact of Water Resource Development

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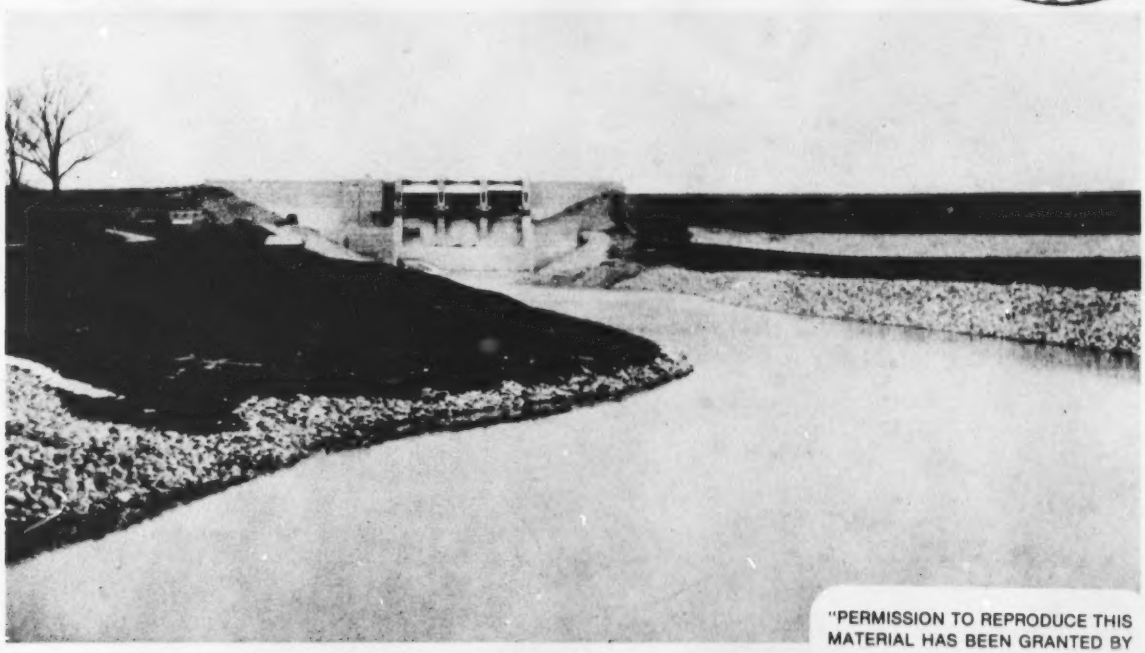

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A Longitudinal Analysis of the Attitudinal Response of Rural People to Natural Resource Development: A Case Study of the Impact of Water Resource Development

TED L. NAPIER and CATHY J. WRIGHT[1]

INTRODUCTION

This bulletin reports the findings of a study designed to evaluate the social impact of a rural development project upon the resident population of a farming area in central Ohio. The developmental stimulus which was the change-producing force in the area under study consisted of a major water impoundment project developed by the U. S. Army Corps of Engineers. The lake project necessitated the acquisition of approximately 8,800 acres of privately owned land and the physical relocation of approximately 90 families.

The research findings reported in this bulletin represent the third phase of forced relocation studies being conducted by sociologists in the Department of Agricultural Economics and Rural Sociology at the Ohio Agricultural Research and Development Center and The Ohio State University. The initial results of the phase one relocation study have been reported by Napier (12, 13, 15), while the second phase was reported by Wright (20) and Napier and Wright (17).

The first phase of the longitudinal study was a comparative analysis of several community groups impacted by water resource development. The second phase of the study effort was oriented toward the evaluation of forced relocation of population due to the construction of a major transportation research center. The present research effort was designed to provide a longitudinal analysis of a community group which had been previously studied during phase one of the forced relocation study. The same research instruments and basic research design employed in the original study were also used in restudy of the selected community. Data from the phase one study were used as a base from which comparisons were made relative to modification in attitudes which were hypothesized to be identifiable.

Another important objective of the restudy was to determine attitudes toward the development project and to determine what factors were predictive of positive and/or negative attitudes toward the lake project. This portion of the research effort was conducted with a cross-sectional research design since comparable data were not collected during the base data time periods.

RURAL AREAS AS LAKE DEVELOPMENT SITES

Most development projects which necessitate extensive land acquisition and subsequent relocation of resident population tend to occur in sparsely populated areas but will, in most instances, be in response to the growth needs of people in urban areas. The reservoir project under study was initiated in response to the water and flood control needs of a major urban area of the state. The recreational facilities and the lake will be utilized most frequently by urban dwellers as well.

Development projects such as large water impoundments, highways, new airports, and others which require large tracts of contiguous land are usually located in areas of relatively low population density since fewer people are required to be relocated. Another factor which increases the probability that rural areas will be selected for such development projects is the cost of the required land. Rural acreage tends to be considerably less costly than urban properties of comparable size. These factors suggest that rural areas, particularly those on the urban fringe, will be confronted with rapid change generated by developmental agencies of the large scale society.[2]

Many factors are considered in the decision making process concerning the implementation of a major water resource development project. Primary emphasis has been placed upon cost-benefit analysis, environmental impact, and the structural feasibility of projects. An area of research which receives much less attention is the social cost of watershed development. While much interest has been generated for the inclusion of social impact statements in water resource project recommendations, relatively little emphasis has been given to the sociological aspects of large watershed projects.

Development projects located in rural areas which necessitate land acquisition and forced relocation of population will continue to serve the growth

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[2]Large scale refers to a social system characterized by mass communication, transportation, high levels of technology, and urbanization (Greer, 7; Napier, 14).

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needs of the region and nation, but such development should not take place at the expense of local people who must bear a disproportionate share of the problems associated with regional growth projects. It is necessary for development agencies actively engaged in the conceptualization and implementation of large projects to become progressively aware of the potential social impact of exogenous change within rural community groups. The purpose of this research report is to partially fill the relative void of social impact studies of natural resource development projects.

NATURAL RESOURCE DEVELOPMENT AND COMMUNITY CHANGE

Social change[3] is a constant phenomenon which affects community groups at differing rates from time to time. Frequently the changes are introduced in such a manner that the group being changed may easily accommodate the modification of the existing social order. However, changes may be introduced which generate very rapid modification of the social order and contribute to disequilibrium within the group. While change is inevitable in any social group (Hobbs, 9), the rapidity with which the change-producing forces are introduced is a significant factor in the explanation of the response of affected community members. Berelson and Steiner (1) contend that adjustment to change is much easier if the changes are gradual so that the various social components of a group have time to accommodate the changes.

When a significant modification of the social system occurs rapidly, adaptation of the components of the system may lag behind the changes occurring in the system, and may produce an unstructured situation. When the rapid change is exogenously induced, the potential for disorganization and maladjustment is compounded. Affected members of the social system may perceive that the changes taking place in their community are beyond their control and a feeling of powerlessness may result. This would suggest that rapid social changes which have potential negative impact will be perceived negatively and the social cost of the change-producing forces will be high.

Social change does not inevitably lead to social disruption. Berelson and Steiner (1) have observed that if social changes are desired by the affected group, then the changes can be assimilated with little social disruption.

If a rural social system (community) is assumed to have achieved some type of equilibrium, an exogenously induced change which results in major disruption of the group will result in the emergence of disequilibrium in the system.[4] To achieve another equilibrium state, restructuring of certain aspects of the social system may be necessary. While the social system is disrupted, the potential exists for social maladjustment or alienation to emerge among the affected group members. Members should feel powerless to control the changes, and the changing community should be perceived as less adequate in meeting their needs with regard to social relationships and interactions, services, and facilities.

The group members' attitudes toward the changing community and the stimulus for the changes (the developmental project) should reflect the impact of the change upon the group. Negative attitudes may be directed toward the community and toward the source of the disruption if negative consequences as a result of the stimulus are perceived by the group. Over time, maladjustment should tend to decrease as the components of the social system become reintegrated.[5]

In essence, the affected group is "confronted" (Bertrand, 2; Napier, 12, 13, 15; Napier and Wright, 16; Wright, 21) with change and the members of the group react to the disruptive change by becoming less favorable toward their community and negative toward the project. As accommodation and reintegration occur, the attitudes toward various aspects of the community should become more favorable.

Water resource development in the form of impoundment construction has the potential of disrupting community groups since resident populations are forced to relocate homes and farms. Friendships may be broken due to out-migration, new cultural definitions may be introduced into the group by new inmigrants (Greer, 7), existing services may be rendered inadequate due to expanded demands by the changing population, and numerous other factors may contribute to significant changes being introduced into the group.

The changes brought about within the community group should serve to modify existing social situations and behavioral patterns. The effect of the modifications taking place within the community group should be identifiable in terms of perceptions that people have toward their community. It is hypothesized that attitudes toward the various components of the community will be less favorable dur-

[3]Social change is a process through which a social system is modified in terms of structure and function (Rogers and Shoemaker, 19).

[4]Dynamic equilibrium exists when "the rate of change in a social system is commensurate with the system's ability to cope with it." Disequilibrium exists when "the rate of change is too rapid to permit the social system to adjust." (Rogers and Burdge, 18).

[5]It is recognized that every component of the same social system will not be affected by exogenous change. It is argued that some social components will be affected to a great extent, while others will be affected to a lesser degree by water resource development.

ing the initial stages of watershed development (during the land acquisition and physical displacement period) and become more favorable once restructuring of the group (resettlement completed) has occurred. It is also hypothesized that negative attitudes toward the project will be identifiable among the affected group members even after the community group has been restructured.

METHODOLOGY

The community[6] evaluated for this study is composed of the residents of three small rural villages and the surrounding farms. The community is located among gently rolling hills in central Ohio near the third largest metropolitan area within the state. The county in which the study community is located has been subject to water resource development in the past and has been experiencing population growth (suburban fringe) due to the expanding urban community. The county is undergoing significant modifications in land use since the urban community has been expanding into the county.

The community under study has been primarily oriented toward production agriculture, with primary emphasis upon grain and cattle. The area was selected for water resource development since it is in close proximity and upstream from the growing urban community which needs future water sources to maintain socio-economic growth. The lake project necessitated the acquisition of approximately 8,800 acres from private owners and required the physical displacement of approximately 90 families from the basin area.

Land procurement began in earnest in 1970 and was completed with the exception of a few court cases in 1971. The dam construction was completed in 1974 and the impoundment at the time of this writing is being filled with water. The displaced families have been resettled. Most of the displaced people have relocated relatively close to the project, with less than 10 families moving out-of-state. While several displaced families have relocated in close proximity to the project, many of these families have indicated that they have moved out of the delineated area to be studied and do not consider themselves to be part of the original community any longer (for example, they may live within the county but not within the disrupted community or may have resettled in another town). The people outside of the delineated boundaries of the community were contacted by the researchers, but stated that they were not part of the study community since they have moved and were excluded from the analysis.

[6]The concept "community" refers to an interactional entity based upon the local residents' perception of the community boundaries. Conversations with local people prior to the study and during the interviewing provided the means of arbitrarily establishing interactional boundaries from which the sample was drawn.

The area has certainly been disrupted during the displacement and construction stages of the project. Houses have been destroyed, farms have gone out of existence, forests have been eliminated, roads have been eliminated and rerouted, bridges have been replaced, long-term residents have left the immediate area, construction crews have been active, urban residents have invaded the area in large numbers to cut firewood, and numerous other stimuli have been introduced as a function of the project. The community will never be the same again, and the research goal is to determine how the people have responded to the changes taking place within their community.

The research questions were developed under the assumption that attitudes toward the community would be modified over time. Data had been gathered in 1970 when the project was in the initial stage of implementation (Napier, 12). These data were designated as the base data (initial shock) and the same data-gathering instruments were used in the restudy. The data from the restudy (post shock) were compared with the base data to determine whether or not changes could be noted.

Land acquisition at the time of the *initial shock* observations was 2 percent completed but the people to be removed were aware that they would be relocated. The land acquisition and relocation of resident population were completed at the time of the *post shock* observations.

RESEARCH DESIGN AND SAMPLING PROCEDURE

The research design used in the study and restudy phases of the research effort may be conceptualized as follows:

	First Study Initial Shock			Second Study Post Shock	
Relocated Group	R	S	O_1		O_2*
Nonrelocated Group	R	S	O_1	R	O_2

R = random selection of sample
S = stimulus
O = observations

*All individuals who had been relocated and had remained within the delineated area were included in the study.

The relocated portion of the post shock sample was not randomly selected since all of the relocated group who had resettled in the delineated community boundaries were contacted by the researchers. This deviates from the original sampling procedure since a systematic sample was used, but was deemed justifiable since so few had relocated in the delineated boundaries.

The total sample drawn from the restructured community (post shock) consisted of 89 subjects. Nineteen had been relocated and 70 were nonrelocated residents. Thirteen of the nonrelocated people had sold land to the development agency but had not been required to relocate their homes.

The respondents were contacted by interviewers who provided explicit instructions relative to the completion of the questionnaire. The questionnaire was left with the consenting respondent and was collected the following day. In-depth interviews were conducted by the interviewers preceding and following the completion of the questionnaire, which provided a *humanistic* dimension to the study.

The systematic sampling techniques to select the nonrelocated portion of the post shock sample consisted of the selection of every fourth occupied dwelling within the delineated area. The first dwelling was chosen at random and the systematic sampling technique was applied. The relocated portion of the post shock sample was selected from names and addresses provided by the developmental agency. Only those people who had remained within the delineated area were included since the primary objective of the study was to evaluate the changes occurring within the delineated community. Those who moved out of the community could not be reacting to the same community and were eliminated from the analysis. A systematic sample of 30 relocated and 30 non-relocated families was selected for the *initial shock* data base.

MEASUREMENT OF VARIABLES

The attitudinal variables measured on a longitudinal basis were: community identification, community alienation, community satisfaction, value orientation, and familism.[7] Two additional attitudinal variables were included in the second data collection phase of the research (post shock), but were not analyzed on a longitudinal basis since comparable data were not available from the first study. These variables were attitude toward the development project and attitude toward land acquisition for development purposes.

Community identification was defined as the *we* feeling shared by community members, which consisted of a consciousness of unity or belonging among the inhabitants. The following indicators of community identification were used in the formation of the construct: cooperative effort by community members, mutual trust among the community members, pride in the community, pride in membership in the community, and the sentiment of liking among community members.

Alienation from the community was measured in terms of degrees of personal adjustment and integration into the community. Alienation was characterized by feelings of powerlessness and self-estrangement from the community group.

Community satisfaction was defined in terms of satisfaction with existing shopping services and services in general. The major component of the measuring instrument was the perception of the people relative to the adequacy of existing services and shopping facilities.

Value orientation was operationalized in terms of attitudes toward and commitment to change in the community. The terms traditionalism and modernism were employed to refer to the two opposing value orientations. Individuals with a traditionalistic value orientation were defined as those who would tend to resist change in their community and support maintenance of the status quo. Individuals with a modernistic value orientation were defined as those who would tend to readily accept change in their community. Rapidity and frequency of change being introduced into the group were the major components of the scale items.

Familism was operationalized in terms of frequency and intensity of interaction with members of the nuclear and extended family. Frequency of interaction refers to the number of times an individual interacts with or desires to interact with members of his family. Intensity of interaction refers to the type of interaction which occurs, whether it is personal or impersonal. A familistic individual would desire frequent and personal interaction with family members as opposed to interaction with nonfamily members.

Attitude toward land acquisition was operationalized in terms of the perceptions held by local residents with regard to the purchasing of private property by the development agency for the reservoir project. The components of the scale measuring attitude toward land acquisition were: perception of the right of the development agency to acquire private property for development purposes, treatment by the land acquisition agents, perceived adequacy of payment for acquired lands, perceived adequacy of information and time for relocation, and the respondent's willingness to sell land for development purposes.

Attitudes toward the development project were defined in terms of perceived benefits which the project would have for the local community. Scale items were based upon perceptions of the community residents with regard to: provision of jobs as a result of

[7]For an extensive discussion of the methodology used in the formulation of the attitudinal scales, see Napier, 12, 13; Wright, 21; Napier and Wright, 16.

the project, the potential for progress as a result of the project, local benefit to be derived from the project, and justification of capital expenditures for the project.

Instrument Construction

Likert-type attitudinal scales were utilized in the measurement of the seven attitudinal variables. A Likert-type scale is composed of a set of attitude items to which respondents indicate their intensity of agreement or disagreement with each item. Summed scores for the scale items place the respondents in position on an attitude agreement continuum for the phenomenon being measured (Kerlinger 10).

The scales measuring community identification, community alienation, community satisfaction, familism, and value orientation were developed, tested, and utilized by Napier (12). The scales were also utilized (with minor modification) by Wright (20, 21). The scales measuring attitudes toward land acquisition and the developmental project were developed by Napier and Wright (16, 20, 21).

Content validity was used as the validation technique for all scales. Internal consistency item analysis was utilized in the analysis of the reliability of the scales. The results of the item analysis for each of the attitudinal scales are presented in Table 1.

The split-half correlation is the correlation of items with each other and the corrected split-half is a predictive measure of the correlation of items with each other under the assumption that the scale is not divided. High values indicate that the scale is an effective measuring instrument and that the items have significant differentiating power. The relatively high split-half and corrected split-half correlations obtained for all scales utilized in the present research indicate that the scales are reliable measuring instruments. The results support item analysis findings obtained in previous uses of the attitudinal scales in which they were shown to be reliable measures (Napier, 12; Wright, 20).

Weighting of the Attitudinal Scales

The five possible responses to each scale item were: strongly agree, agree, undecided, disagree, and strongly disagree. Weights of 1 to 5 were given to each item and the items were summed for each scale. The possible range of scores for the attitudinal scales and interpretation of the scores are in Table 2.

Techniques for Analysis

Analysis of variance (Blalock, 3) was used to determine the existence of differences between the initial shock and post shock groups with regard to the five attitudinal variables (community identification, community alienation, community satisfaction, familism, and value orientation).

TABLE 1.—Results of the Internal Consistency Item Analysis for the Attitudinal Scales.

Scale	Split-Half Correlation	Corrected Split-Half Correlation
Community Identification	0.7456	0.8543
Community Alienation	0.8741	0.9328
Community Satisfaction	0.7079	0.8290
Value Orientation	0.8026	0.8905
Familism	0.7922	0.8840
Land Acquisition	0.8205	0.9014
Development Project	0.9374	0.9677

TABLE 2.—Range of Possible Scale Scores for Selected Attitudinal Scales: Number of Scale Items in Parentheses.

Scale	Range of Scores		Median Possible Scale Score
Community Alienation (20)	20-100	high alienation	60
Community Identification (12)	12- 60	high identification	36
Community Satisfaction (6)	6- 30	high satisfaction	18
Value Orientation (7)	7- 35	high traditionalism	21
Familism (9)	9- 45	high familism	27
Attitude Toward Land Acquisition (14)	14- 70	highly negative	42
Attitude Toward the Project (11)	11- 55	highly negative	33

The following comparisons were made for each of the attitudinal variables:

- Total initial shock group with total post shock group.
- Initial shock relocated group with post shock relocated group.
- Initial shock nonrelocated group with post shock nonrelocated group.

The first three comparisons were made in order to determine attitudinal changes which were hypothesized to occur over time for the total group and for relocated and nonrelocated subgroups. A fourth comparison was made to determine if significant differences could be noted between the post shock relocated and the post shock nonrelocated groups. This comparison was made in order to determine the effects of relocated status on attitudes. The initial shock group had been analyzed by Napier (12, 13), and the results of the initial study are reported in the findings section of this bulletin.

Step-wise regression analysis was used to determine the relative importance of the selected attitudinal variables hypothesized to explain attitudes toward the developmental project.

FINDINGS

The summary findings for the attitudinal variables are presented in Table 3. These findings basically reveal that the restructured community group possessed stronger commitments to the group after the project was completed than during the land acquisition stage of project implementation. In this respect, the hypothesis that the restructured group would exhibit more positive attitudes toward their community than during the disruption stages was consistently supported. The data revealed that the post shock group also differed from the initial shock group in terms of traditionalism. The post shock group was significantly more traditionalistic in their orientation than the initial shock group, which suggests that the post shock group perceived that change was taking place too rapidly in the restructured community compared to the situation in the community prior to the major disruptive forces.

Inspection of the mean scale score for the initial shock and post shock groups will show the following findings:

TABLE 3.—Comparison of Initial Shock and Post Shock Groups for Selected Attitudinal Scale Scores: Summary Statistics for Analysis of Variance Findings.

Attitudinal Scale		Initial Shock	Post Shock	F-Ratio (Degrees of Freedom = 1 and 147)
Community Alienation	Sample Size	60	89	6.5*
	Mean	46.0	41.1	
	Standard Deviation	11.1	12.0	
Community Identification	Sample Size	60	89	9.0**
	Mean	45.2	48.2	
	Standard Deviation	6.1	6.0	
Community Satisfaction	Sample Size	60	89	3.8*
	Mean	17.4	19.0	
	Standard Deviation	4.5	5.0	
Traditionalism	Sample Size	60	89	10.7**
	Mean	19.4	22.5	
	Standard Deviation	5.3	5.9	
Familism	Sample Size	60	89	11.1***
	Mean	34.8	37.5	
	Standard Deviation	4.4	5.1	

*Significant at the .05 level.
**Significant at the .01 level.
***Significant at the .001 level.

TABLE 4.—Comparison of Initial Shock Relocated and Post Shock Relocated Groups for Selected Attitudinal Scale Scores: Summary Statistics for Analysis of Variance Findings.

Attitudinal Scale		Initial Shock Relocated	Post Shock Relocated	F-Ratio (Degrees of Freedom = 1 and 47)
Community Alienation	Sample Size	30	19	1.7
	Mean	45.7	41.6	
	Standard Deviation	10.6	11.3	
Community Identification	Sample Size	30	19	2.0
	Mean	45.3	47.8	
	Standard Deviation	6.4	5.7	
Community Satisfaction	Sample Size	30	19	0.1
	Mean	18.2	17.8	
	Standard Deviation	4.3	5.8	
Traditionalism	Sample Size	30	19	0.6
	Mean	21.0	22.3	
	Standard Deviation	4.9	6.8	
Familism	Sample Size	30	19	4.1*
	Mean	34.5	37.2	
	Standard Deviation	4.5	4.6	

*Significant at the .05 level.

- Both initial shock and post shock groups were not alienated from the community. In fact, both groups would be considered well integrated. The post shock group was significantly more integrated than the initial shock group.
- Both treatment groups were highly identified with the community and the post shock group was significantly more identified.
- Both treatment groups exhibited a slightly negative to neutral attitude toward community services. The post shock group was significantly more favorable to services than the initial shock, but the mean score for the post shock group would be classified as neutral to very slightly positive.
- The post shock group tended to be slightly traditionalistic, while the initial shock group tended to be slightly modernistic.
- Both treatment groups were highly familistic and the familism was increased over time. The post shock group was more familistic than the initial shock group.

When the data were disaggregated into relocated and nonrelocated subgroups, the role of relocation status in the explanation of the differences which were noted in the two aggregated treatment groups (initial shock and post shock) could be observed.

The greatest source of the differences identified between the aggregated groups (Table 3) was nonrelocated status. Table 4 shows that the initial shock relocated group differs significantly from the post shock relocated group in terms of the familism variable.

The post shock relocated group was significantly more familistic than the initial shock relocated group, which is consistent with the aggregate group findings. The findings in Table 4 show that no significant differences were noted between the two treatment groups for the other variables.

Note should be made of the small sample size in the post shock relocated group. It is conceivable that the relatively small sample size could be a problem for the post shock relocated group, but the limited number of families who had relocated within the delineated boundaries precluded expansion of the sample size.

The data presented in Table 5 demonstrate that the post shock group differed from the initial shock group on all variables. The differences were consistent with the aggregate findings (Table 3).

The date presented in Table 5 clearly demonstrate that the nonrelocated group modified its attitudes much more than the relocated group. It is interesting to note that the modifications were in the positive direction.

Table 6 presents the findings for the post shock group disaggregated into relocated and nonrelocated subgroups. The findings demonstrate no significant differences and the mean scores indicate positive attitudes. Traditionalism tended to be somewhat higher than modernism for both groups.

TABLE 5.—Comparison of Initial Shock Nonrelocated and Post Shock Nonrelocated Groups for Selected Attitudinal Scale Scores: Summary Statistics for Analysis of Variance Findings.

Attitudinal Scale		Initial Shock Relocated	Post Shock Relocated	F-Ratio (Degrees of Freedom = 1 and 98)
Community Alienation	Sample Size	30	70	4.1*
	Mean	46.3	40.9	
	Standard Deviation	11.8	12.2	
Community Identification	Sample Size	30	70	6.0*
	Mean	45.1	48.4	
	Standard Deviation	6.0	6.1	
Community Satisfaction	Sample Size	30	70	6.6**
	Mean	16.6	19.3	
	Standard Deviation	4.6	4.8	
Traditionalism	Sample Size	30	70	15.3***
	Mean	17.8	22.5	
	Standard Deviation	5.2	5.7	
Familism	Sample Size	30	70	5.0*
	Mean	35.1	37.6	
	Standard Deviation	4.3	5.2	

*Significant at the .05 level.
**Significant at the .01 level.
***Significant at the .001 level.

TABLE 6.—Comparison of Post Shock Relocated and Nonrelocated Groups for Selected Attitudinal Scale Scores: Summary Statistics for Analysis of Variance Findings.

Attitudinal Scale		Post Shock Relocated	Post Shock Nonrelocated	F-Ratio (Degrees of Freedom = 1 and 87)
Community Alienation	Sample Size	19	70	0.04*
	Mean	41.6	40.9	
	Standard Deviation	11.3	12.2	
Community Identification	Sample Size	19	70	0.1*
	Mean	47.8	48.4	
	Standard Deviation	5.8	6.1	
Community Satisfaction	Sample Size	19	70	1.3*
	Mean	17.8	19.3	
	Standard Deviation	5.8	4.8	
Traditionalism	Sample Size	19	70	0.02*
	Mean	22.3	22.5	
	Standard Deviation	6.8	5.7	
Familism	Sample Size	19	70	0.1*
	Mean	37.2	37.6	
	Standard Deviation	4.6	5.2	

*Not significant at the .05 level.

SUMMARY OF ATTITUDINAL FINDINGS

The major analysis of variance findings of the study were:

- The community group under study was more integrated (less alienated) at the time of the restudy than during the first data collection phase of the research.
- The community group exhibited higher degrees of community identification at the second data collection phase of the research.
- The community group was significantly more satisfied with community services at the second data collection time period. (The services were basically the same after the project as they had been before, with the exception of better highways since they were new.)
- The community group tended to be more traditionalistic during the second time period of the study.
- The community group exhibited higher degrees of familism at the second time period.

The analysis of variance findings are summarized in Table 7.

ATTITUDES TOWARD THE WATERSHED PROJECT

Since comparable base data were not collected during the initial data collection phase of the research project, a longitudinal analysis of attitudes toward

TABLE 7.—Summary of Analysis of Variance Findings for Five Attitudinal Variables.

Groups Compared	Alienation	Identification	Satisfaction	Traditionalism	Familism
Total Initial and Post Shock	s* P.S. less alienated	s P.S. more identified	s P.S. more satisfied	s P.S. more traditionalistic	s P.S. more familistic
Initial Shock and Post Shock Relocated	ns*	ns	ns	ns	s P.S. more familistic
Initial Shock and Post Shock Nonrelocated	s P.S. less alienated	s P.S. more identified	s P.S. more satisfied	s P.S. more traditionalistic	s P.S. more familistic
Initial Shock Relocated and Nonrelocated	ns	ns	ns	s Relocated more traditionalistic	ns
Post Shock Relocated and Nonrelocated	ns	ns	ns	ns	ns

*A significant difference between time periods is designated by an s, while a nonsignificant difference is represented by ns.

TABLE 8.—Correlation Matrix for Selected Independent Variables and Attitudes Toward the Development Project.

	(X_1)	(X_2)	(X_3)	(X_4)	(X_5)	(X_6)	(X_7)	(X_8)	(X_{10})	(X_{11})
(X_1) Community Identification										
(X_2) Community Alienation	—0.7949*									
(X_3) Community Satisfaction	0.3470*	—0.5297*								
(X_4) Value Orientation (Traditionalism)	0.3920*	—0.4827*	0.2847*							
(X_5) Familism	0.2123	—0.4030*	0.2115	0.1827						
(X_6) Attitudes Toward Land Acquisition	0.2795*	—0.3139*	0.0552	0.6239*	—0.0187					
(X_7) Attitudes Toward the Project	0.2512*	—0.2838*	0.1546	0.7055*	—0.0480	0.8146*				
(X_8) Education	—0.1732	0.1518	—0.0570	—0.0598	—0.0559	—0.2609*	—0.1638			
(X_9) Age	0.0242	—0.0478	0.0755	—0.0418	—0.0696	—0.0136	0.0818	0.3129*		
(X_{10}) Length of Residence	0.2988*	—0.2074	0.2461*	0.1133	—0.0092	0.1212	0.1615	0.1982	0.5681*	
(X_{11}) Relocated Status	0.0542	—0.0361	0.1946	—0.0369	0.0826	—0.0580	0.0282	—0.0065	—0.1419	—0.0785

*Indicates a significant correlation. A zero order correlation of 0.2221 is necessary to be significant at the .05 level.

the development project was not possible. Attitudes toward land acquisition and the lake project were analyzed in terms of a cross-sectional research design.

Multiple correlation and step-wise regression analysis were employed to determine the relative importance of selected factors in the explanation of the response of affected people to water resource development. The correlation matrix is presented in Table 8, which demonstrates that four variables were significantly related to attitudes toward the development project.[8] The four significant variables were: attitudes toward land acquisition (correlation of 0.8146 which is significant at the .001 level); value orientation (correlation of 0.7055 which is significant at the .001 level); community alienation (correlation of −0.2838 which is significant at the .05 level); and community identification (correlation of 0.2512 which is significant at the .05 level).

The correlation findings basically supported the position that negative attitudes toward the project tended to be associated with increasing negativism toward land acquisition for development purposes. Negative attitudes toward the project also tended to increase as traditionalism increased, as the degree of alienation decreased, and as community identification tended to increase.

An interesting finding from the study was the relative insignificance of basic demographic variables in the correlation matrix. Education, age, length of residence, and relocated status were not significantly related to the dependent variable and seldom significantly related to other independent variables.[9] For example, relocated status was not significantly related to any other variable.

[8]High scores indicate negative attitudes toward the land acquisition scale and negative attitudes toward the project scale.

REGRESSION FINDINGS: FACTORS PREDICTIVE OF ATTITUDES TOWARD THE WATERSHED PROJECT

The regression analysis findings revealed that two variables explained approximately 72% of the variance in the attitude toward the development project. The most important variable was attitude toward land acquisition which explained about 66% of the variance in the dependent variable. Value orientation (traditionalism) increased the explained variance by 6% (72% explained by land acquisition and traditionalism). The addition of age, familism, and relocated status increased the explained variance by 2% (74%), but the F-ratios of these variables were not significant at the .05 level. The remaining independent variables did not contribute to the reduction of the unexplained variance in project attitudes and their respective F-ratios were not significant at the .05 level.

The regression equations for the best regression model and the total regression model are presented on the next page in standardized beta coefficient form:

[9]Education was operationalized in terms of the number of years of formal education of the respondent. Age was measured in terms of age at last birthday. Length of residence was measured in terms of the number of years the respondent had lived in the community. Relocated status was entered as a dummy variable in terms of relocated and nonrelocated.

Best Regression Model for Attitude Toward the Development Project

$y = -3.49 + 0.8146\ x_1 + e$

Adjusted R-square = 0.6592

$y = -6.28 + 0.6131\ x_1 + 0.3230\ x_2 + e$

Adjusted R-square = 0.7201

where:

y = attitude toward development project
x_1 = attitude toward land acquisition
x_2 = value orientation (traditionalism)
e = error

Ten Variable Regression Model for Attitude Toward the Development Project

$y = -15.24 - 0.007\ x_1 + 0.096\ x_2 + 0.051\ x_3 + 0.389\ x_4 - 0.080\ x_5 + 0.597\ x_6 - 0.042\ x_7 + 0.131\ x_8 - 0.005\ x_9 + 0.096\ x_{10} + e$

Adjusted R-square = 0.7275

where:

y = attitude toward development project
x_1 = community identification
x_2 = community alienation
x_3 = community satisfaction
x_4 = value orientation (traditionalism)
x_5 = familism
x_6 = attitude toward land acquisition
x_7 = education achievement level
x_8 = age
x_9 = length of residence in community
x_{10} = relocated status
e = error

SUMMARY OF CORRELATION AND REGRESSION FINDINGS

Attitudes toward the development project were significantly related to the following four variables: community identification, community alienation, traditionalism, and attitude toward land acquisition. As community identification and traditionalism increased, there was a concomitant increase in the emergence of negative attitudes toward the project. As negativism toward land acquisition increased, there was a corresponding increase in negative attitudes toward the project, and as community alienation increased, there was a corresponding decrease in negativism toward the project.

The regression findings demonstrated that two factors were the best predictors of attitudes toward the project. Attitudes toward land acquisition and traditionalism were shown to be the most significant factors and explained about 72% of the variance in attitude toward the project. The remaining variables were relatively insignificant in the reduction of the remaining variance in the dependent variable.

It should be noted that the mean scale scores for the land acquisition and attitudes toward the project scales revealed that the affected group was quite negative on both project related variables. The mean scale score for land acquisition was 50.0 and the mean score for the development project was 39.7, which are higher than the median values of 42 and 33 respectively for the two scales.

DISCUSSION OF FINDINGS AND CONCLUSIONS

The study clearly supported the position that watershed development in the form of a large impoundment project did not result in a fragmented social unit, but in fact may have served to enhance the social cohesiveness of the group. This finding is consistent with previous research by Napier (12, 13, 15), Napier and Wright (16), and Wright (20). The previous research demonstrated that community groups disrupted by large development projects necessitating acquisition of extensive land acreage did not result in the emergence of negative attitudes toward the community.

The longitudinal analysis also added other dimensions to the previous research, particularly in terms of the ex post facto situation within the affected community group. The study results reported in this bulletin demonstrated that the restructured community group was more cohesive and positive about their community than in the initial stages of project implementation.

There are several possible reasons for the emergence of more positive attitudes. One possible explanation for the emergence of more positive attitudes toward the community would be a collective response to an outside threat which would tend to draw people closer together and necessitate the formation of *community feelings*. If the people feared outside development and perceived the development project as having potential negative consequences for the group, then a strong motivating force for collective action would emerge which would require close cooperation and cohesiveness. The lake project was perceived in a rather negative manner and a *grass-roots* group did emerge to oppose additional recreational development in the area. This would suggest that some collective resistance to external development was operating.

Another possible explanation for the emergence of stronger positive community attitudes among the restructured community members may be associated with experience of the people with the project. If the people discovered that their perceptions about the potential negative consequences of the project established during the project implementation stages were unfounded, then the attitudes would be expected to be more positive at a later time.

It may be argued that outmigration of the dissatisfied people within the community is the major factor in understanding the emergence of more posi-

tive attitudes toward the community-related variables. While it is possible that outmigration of dissatisfied residents could result in an increment in positive attitudes, the situation in reality does not support such a position. While many of the relocated people moved outside of the community (most of those people relocated within the county or adjacent counties), the relocated people included in the sample (nearly all who remained in the reconstructed community) were not significantly different from the initial shock relocated group with the exception of familism (post shock were more familistic). If the post shock group had been significantly more positive than the initial shock group on several other variables, then the possibility of selective outmigration of unhappy people would have had more merit. The data, in fact, suggest that the nonrelocated group was the greatest source of the changing attitudes since the post shock nonrelocated group differed significantly from the initial shock nonrelocated group on all variables.

An interesting question is why were the nonrelocated people more positive about the social relationships of the community during the second time period than during the initial stages of program implementation? The authors contend that anticipated negative consequences of the project upon the social group were not realized. That is not to say the people believed the project would benefit the local community. The data, in fact, would suggest that the local people did not perceive the project well in terms of local benefits being derived from the lake project.

The initial concern of the nonrelocated people may be a partial function of alternatives made available to them. The nonrelocated people had no guarantee for sale of land and they would have had to assume all economic costs of moving if they had elected to leave. The social unrest due to the displacement of long-term residents generates uncertainties within the group which apply to all of those who remain within the impacted community. These and numerous other factors operate to unstructure a structured situation for the affected group.

More uncertainties are introduced into the socio-economic framework of the community, but unlike the relocated people, the nonrelocated people are not as *free* to move. In this regard, the nonrelocated people are subject to the uncertainties of the project impact as well as the limited alternative of relocation if the interaction patterns which emerge within the restructured community should become negative. The increasingly positive attitudes toward the community and social relationships could be explained in the context of the above position if the community situation was not so radically modified as was first feared (anxieties over a fragmented social group were not realized). The evolution of community awareness in the form of pressure groups to deter further development could have increased social cohesiveness as well.

The regression findings are quite interesting in light of the above discussion. The major factor in the explanation of attitudes toward the project was attitude toward land acquisition. The concepts forming the construct termed land acquisition were primarily oriented toward project implementation procedures employed by the development agency during the initial stages of the project (see Appendix for individual items in the scale). The findings revealed that as land acquisition attitudes became negative, there was a strong tendency for attitudes toward the project to become negative. Since the community related variables tended to be less significantly related to attitudes toward the project, one may conclude that perceptions of the community are not necessarily associated with attitudes toward the project generated exogenous to the community. In essence, people will maintain positive feelings about the social relationships with their community even when the physical structure and social composition are changed by external forces. This would suggest that perceptions of desirability or undesirability of the community are separate from acceptance or rejection of water impoundment projects.

The authors must draw the conclusion that implementation procedures are the major factor in the acceptance or resistance to the watershed project. Previous research by Napier and Wright (16) provided some suggestion that procedural problems of development implementation strategies existed and contributed to the emergence of negative attitudes among affected people. The findings from this research effort add further support to the tentative conclusion from the previous study.

Another important variable in the explanation of attitudes toward the project was value orientation in the form of traditionalism. As traditionalism increased, there was a concomitant increase in negative attitudes toward the project. When people perceived change as coming too rapidly to their community, they reacted negatively to the change stimulus which in this case was the project. While the group was not strongly traditionalistic (actually as a group they were neutral to slightly traditionalistic), the greater the traditionalism the greater the negativism toward the project.

ACTION RECOMMENDATIONS

The findings from this longitudinal study of a group affected by a water resource development project suggest that agencies interested in increasing the acceptance of projects which require acquisition of large tracts of land should carefully examine project implementation procedures and the rapidity with which the project is introduced into a community group. Particular review should be made of land procurement policies. The land acquisition scale data revealed that people believed they were not receiving fair and equitable treatment from the land procurement agents of the Corps of Engineers. The people believed that more time was necessary to secure new housing and to move.

A concern of the study group was prompt payment for lands to be acquired for development purposes. It is important that all affected people receive fair and rapid payments for acquired lands so that the process of resettlement may be achieved with dispatch. Emphasis should be placed upon *all* people and not only those who resort to legal channels to secure larger payments. It is interesting to note that research on other types of development projects (which employ eminent domain norms to secure properties) shows that individuals who resort to legal means often secure larger payments than those who accept what is offered (Hallberg and Flinchbaugh, 8).

The lack of definitive time periods for project implementation may have severe impact upon people. Research (Ellithorpe, 6; Ludtke and Burdge, 11) has shown that people anticipating forced relocation of population due to water resource development may not maintain their properties in the best manner possible. If there are lengthy time delays between first knowledge of the possible impending move and actual land procurement, landholders may be placed in an unduly stressful situation since they are uncertain whether or not to improve their homes and farms. In the community studied, the people had been aware for some time that a major impoundment would be constructed in their area, but were uncertain as to the specifics of the lake project and when the project would be started. Local residents noted that there was considerable uncertainty in terms of the project ever being built, and if it were to be constructed, whose land would be taken. The end product of these uncertainties was dissonance among local landowners relative to maintenance of properties. Many resolved their dissonance situation by doing little to their land in terms of improvement. The landowners subsequently suffered in terms of reduced appraised values.

The development agency should attempt to avoid the potential problems of an extended period of uncertainty over the development project. Rumors about large lake projects tend to spread rapidly, and the effects of unfounded rumors may be difficult to counteract. Burdge and Ludtke (5), for example, found that preconceived ideas about the consequences of the project influenced to some extent affected individuals' response to the project.

Other research efforts support the position that past experience with development projects affects attitudes toward further changes. A positive experience with planned change tends to lead to positive attitudes toward further change (Peterson and Ross, 17). The implication for development agencies is that they should be especially concerned with the response of local residents to an initial development project in their community. An initial negative experience may make further development activity in the community extremely difficult since people will be more likely to resist.

While large development agencies such as the Corps of Engineers may not be concerned about further development in a particular local community (there are many other development sites), the experience, both positive and negative, of local groups will have an impact in the future. Given the growing concern among many people for the emergence of symbiotic relationships between existing socio-cultural situations and planned natural resource development, development agencies will increasingly have attention focused upon their efforts. Negative development experiences in one area will have consequences for the development agency when it attempts to initiate comparable projects in other areas.

In the community under study, a major recreation project has been effectively resisted and may be blocked. The previous negative experience apparently contributed to the emergence of a local anti-development group organized primarily to stop further external development.

In essence, the study revealed that water resource development and subsequent population relocation did not result in the emergence of negative attitudes toward the social relationships in the affected group. The study did reveal significant negative attitudes toward the land acquisition practices and toward the project *per se*. These findings and those from previous research conducted by the authors lead to the conclusion that social-psychological attitudes associated with community relationships are less useful in the explanation of affected people's response to water resource development than are commonly believed. More research emphasis should be placed upon implementation procedures employed by development agencies. Perhaps comparative implementation stra-

tegies should be evaluated to gain useful insight into more acceptable project implementation procedures.

One implementation procedure which proved to be a serious problem within the group under study was the attempt by a state development agency to follow up the lake project with subsequent land procurement for recreational development purposes. This activity was met with vigorous opposition since the additional land procurement would have necessitated another relocation for some people who had moved from the basin area and further disruption of the group. If the recreational project needs had been included in the initial project proposal, the resistance would probably have been much less. This experience suggests that comprehensive and coordinated planning is essential among development agencies to reduce the problems a community group affected by large project development must overcome.

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APPENDIX—ATTITUDINAL SCALES

Community Identification Scale

I know most people in this community quite well.
The people in this community are like one big happy family.
I am concerned about what happens to the people in this community.
Most people in this community are friendly to my family.
I am often willing to help my neighbors when they are in need of assistance.
I feel that I have never really been accepted by the people in this community.
Many people in this community are unfriendly.
I take pride in the success of a neighbor.
When a neighbor needs help in a job, I am happy to lend him a hand.
I often share tools with my neighbors.
I do not feel that I am wanted in this community.
When someone leaves this neighborhood, nearly everyone feels a loss.

Community Alienation Scale

I feel fairly well adjusted to this community.
I definitely like this community.
This community fulfills most of my needs.
Most leaders of this community are concerned about me as a person.
Most people in this community cannot be trusted.
I would associate with most people in this community.
I feel fairly well satisfied with this community.
I am not important as a person in this community.
I would prefer to live in another community.
Most elected officials cannot be trusted.
I do not believe this community will prosper.
Most leaders of this community understand the problems of the people.
This community is a good place in which to live.
I am proud to be a member of this community.
This community does not provide for my needs very well.
Few of my neighbors are concerned about me as a person.
Most leaders of this community respond to the needs of the community members.
I do not feel at home in this community.
Most people in this community work to make the community a better place in which to live.
Few people in this community care what happens to the other members of the community.

Community Satisfaction Scale

Most people are not able to buy the things they need in the stores in this community.
The services in this community basically satisfy my needs.
We often have to go to surrounding towns to get the things we need.
Basically the services in this community are very poor.
Most people have to do without many services in this community.
I can get most of the things I need in this community or in stores nearby.

Value Orientation Scale

Most of the changes in this community have come too slowly.
What this community needs is more change.
Most old-fashioned ideas hold back progress in this community.
Most people must give up the old ways of the past if this community is to prosper.
Change is coming too fast in this community.
Most modern ways of doing things bring progress to the community.
Community progress is more important than living by the ways of the past.

Familism Scale

I would rather visit with friends than with my relatives.
I take pride in the success of a close relative.
Most of the time, I do not want to be bothered by my relatives.
Communicating with family members is important to me.
Home is the most pleasant place in the world.
Family relationships have been stressed too much.
The family group is becoming less important to me over time.
A person should seldom visit his family.
What happens to my relatives is of little concern to me.

Attitude Toward Land Acquisition Scale

The Corps of Engineers should provide more information regarding available housing in the area when people are forced to relocate for such projects as lake construction.
The Corps of Engineers gave most relocated people enough time to find housing and to move from the area to be inundated.
The Corps of Engineers paid a fair price for the properties purchased for the lake.
The Corps of Engineers should not have the right to require people to move for such things as lake construction.
The Corps of Engineers was fair in its dealings with people who had to move from the area to be inundated.
More money for the acquired property would have made the situation better for those people required to move for lake construction.
Most of the time, the Corps of Engineers' agents for land acquisition were courteous to the people.
The Corps of Engineers did not give the people in the community enough information about the lake project before the land was acquired.
The Corps of Engineers practically stole the property needed to build the lake.
I was willing to sell my property so that the community as a whole could prosper.
I did not object to selling my property to the Corps of Engineers for the lake project.
The Corps of Engineers paid too much for the lands required for the lake project.
The selling of my property to the Corps of Engineers placed a financial burden upon me.

The Corps of Engineers treated everyone fairly in the acquisition of the properties needed for the lake project.

Attitude Toward the Project

The lake will provide many jobs for local people.
The lake will make this community a better place in which to live.
The lake project should have been located in another area.
The lake development will bring progress to this community.
The lake was not needed here.
The lake is a valuable addition to this community.
The lake will not benefit the local community much.
The people in this community should have prevented the lake from being located here.
The costs of building the lake can be justified.
The lake will be a nuisance in our community.
The advantages brought to the community by the lake do not offset the disadvantages.

BETTER LIVING IS THE PRODUCT

of research at the Ohio Agricultural Research and Development Center. All Ohioans benefit from this product.

Ohio's farm families benefit from the results of agricultural research translated into increased earnings and improved living conditions. So do the families of the thousands of workers employed in the firms making up the state's agribusiness complex.

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The Ohio Agricultural Experiment Station, as the Center was called for 83 years, was established at The Ohio State University, Columbus, in 1882. Ten years later, the Station was moved to its present location in Wayne County. In 1965, the Ohio General Assembly passed legislation changing the name to Ohio Agricultural Research and Development Center—a name which more accurately reflects the nature and scope of the Center's research program today.

Research at OARDC deals with the improvement of all agricultural production and marketing practices. It is concerned with the development of an agricultural product from germination of a seed or development of an embryo through to the consumer's dinner table. It is directed at improved human nutrition, family and child development, home management, and all other aspects of family life. It is geared to enhancing and preserving the quality of our environment.

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Ohio's major soil types and climatic conditions are represented at the Research Center's 13 locations.

Research is conducted by 15 departments on more than 7200 acres at Center headquarters in Wooster, eight branches, Green Springs Crops Research Unit, Pomerene Forest Laboratory, North Appalachian Experimental Watershed, and The Ohio State University.

Center Headquarters, Wooster, Wayne County: 1953 acres

Eastern Ohio Resource Development Center, Caldwell, Noble County: 2053 acres

Green Springs Crops Research Unit, Green Springs, Sandusky County: 26 acres

Jackson Branch, Jackson, Jackson County: 344 acres

Mahoning County Farm, Canfield: 275 acres

Muck Crops Branch, Willard, Huron County: 15 acres

North Appalachian Experimental Watershed, Coshocton, Coshocton County: 1047 acres (Cooperative with Agricultural Research Service, U. S. Dept. of Agriculture)

North Central Branch, Vickery, Erie County: 335 acres

Northwestern Branch, Hoytville, Wood County: 247 acres

Pomerene Forest Laboratory, Coshocton County: 227 acres

Southern Branch, Ripley, Brown County: 275 acres

Western Branch, South Charleston, Clark County: 428 acres